

SOIL FEATURES

GENERAL

Estimates of several important soil features are provided which are used in land use planning that involves engineering considerations. Soil features which are covered include restrictive layer (kind, depth to top, thickness, and hardness), subsidence (initial and total), potential for frost action, and risk of corrosion for uncoated steel and for concrete. See National Soil Handbook Part 618 for specific criteria use for these estimates.

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Restrictive layer – soil layers of restriction are identified and described in the field. Restriction kind, hardness, depth, and thickness are observed, measured, and recorded.

Restriction kind is the type of nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly reduce the movement of water and air through the soil or that otherwise provide an unfavorable root environment. Examples of restrictive layers in West Virginia include bedrock and fragipans.

Restriction depth is the vertical distance from the soil surface to the

upper and to the lower boundary of the restriction.

Restriction thickness is the distance from the top to the bottom of a restrictive layer.

Restriction hardness is the rupture resistance of an air-dried, then submerged block-like specimen of mineral material.

Subsidence is the decrease in surface elevation as a result of the drainage of wet soils that have organic layers or semifluid mineral layers.

Initial subsidence is the decrease of surface elevation that occurs within the first 3 years of the drainage of these wet soils. Total subsidence is the potential decrease of surface elevation as a result of the drainage of these wet soils. The susceptibility of soils to subsidence is an important consideration for organic soils that are drained. If these soils are drained for community development, special foundations are needed for buildings. Utility lines, sidewalks, and roads that lack special foundations may settle at different rates, thus causing breakage, high maintenance costs, and inconvenience. If the soils are drained for farming, the long-term effects of subsidence, the possible destruction of land if it subsides below the water table, and possible legal implications if the soils are in wetlands must be considered.

Potential frost action is the rating for the susceptibility of the soil to upward or lateral movement by the formation of segregated ice lenses. It rates the potential for frost heave and subsequent loss of soil strength when the ground thaws. Potential frost action classes are: Low – soils are rarely susceptible to the formation of ice lenses; Moderate – soils are susceptible to the formation of ice lenses, which results in frost heave and subsequent loss of soil strength; High – soils are highly susceptible to the formation of ice lenses, which results in frost heave and subsequent loss of soil strength.

Risk of Corrosion for uncoated steel and concrete – the risk of corrosion for uncoated steel is the susceptibility of uncoated steel to corrosion when in contact with the soil. Risk of corrosion on uncoated steel pertains to the potential soil induced electrochemical or chemical action that converts iron into its ions, thereby dissolving or weakening uncoated steel. The risk of corrosion classes are low, moderate, and high.

The risk of corrosion for concrete is the susceptibility of concrete to corrosion when in contact with the soil. Risk of corrosion pertains to the potential soil induced chemical reaction between a base (the concrete) and a weak acid (the soil solution). The risk of corrosion classes are low, moderate, and high.

NASIS

1. Using the NASIS select manager, load the area, correlated legend, and data mapunits for the survey area

2. On the menu bar, select Options, then Standard Reports
3. Click on the National button
4. Select MANU – Table K2. – Soil Features